Matrix Assisted Cell Transplantation of Promyogenic Fibroadipogenic Progenitor (FAP) Stem Cells

Grant Award Details

Matrix Assisted Cell Transplantation of Promyogenic Fibroadipogenic Progenitor (FAP) Stem Cells

Grant Type: Quest - Discovery Stage Research Projects

Grant Number: DISC2-13201

Investigator:

Name:	Brian Feeley
Institution:	University of California, San Francisco
Type:	PI

Award Value: $1,179,478

Status: Pre-Active

Grant Application Details

Application Title: Matrix Assisted Cell Transplantation of Promyogenic Fibroadipogenic Progenitor (FAP) Stem Cells

Public Abstract:

Research Objective

We seek to develop a cell based-hydrogel therapy to improve outcomes in patients with muscle degeneration. The technology will improve muscle through sustained release of cell-based cytokines.

Impact

While designed for rotator cuff injuries based on the model, low back pain and spinal degeneration as well as traumatic muscle loss would be well served by this therapeutic.

Major Proposed Activities

- Evaluation of pro-myogenic activity of human FAP-BAT in co-culture experiments. We will confirm the ability to isolate human FAPs and differentiate into a pro-myogenic subpopulation of myogenic FAPs.
- Optimization of hydrogels for engrafting of BAT-FAPs. We will select one candidate HyA hydrogel formulation that allows for the highest pro-myogenic and beige fat gene expression of implanted FAP-BATs
- Characterization of MACT-BAT-FAPs transplantation in a delayed rotator cuff repair. We will implant hydogels + FAPs in a delayed rotator cuff repair model to determine effects on muscle quality.

Statement of Benefit to California:	The proposed research will be of significant impact to the citizens of California. Given the aging population, an increasing number of California citizens are likely to develop rotator cuff injuries and other conditions that result in muscle degeneration. If successful, this product would offer the first treatment to treat localized muscle atrophy and degeneration through a cell based transplant strategy that stimulates exogenous and endogenous delivery of promyogenic factors.

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